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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/510,212	06/27/2005	Masayoshi Ishikawa	046124-5328	8665
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/510,212	Applicant(s) ISHIKAWA ET AL.	
	Examiner Anastasia Midkiff	Art Unit 2882	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 30 June 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 5, 9, 13, 14 and 18 is/are allowed.
- 6) ☒ Claim(s) 2-4, 6-8, 10-12 and 15-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 10-12, and 15-17 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Patent to Nakamura et al. (USP# 5,517,545).

With respect to Claims 10 and 15, Nakamura et al. teach an x-ray tube control apparatus, and the method for its use, comprising:

- input means (290) to which a maximum voltage value of tube is input
(Column 7, Lines 20-26);
- storage means (270) which stores a plurality of limit tube voltage control programs for stopping application of a tube voltage with a limit tube voltage value corresponding to a maximum tube voltage value of said tube as a threshold according to the maximum tube voltage values (Column 12, Lines 3-20);

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- extraction means (280) which extracts one from said plurality of limit tube voltage control programs stored in said storage means which corresponds to the maximum tube voltage value input (Column 7, Lines 25-34);
- output means (210), which outputs said limit tube voltage control program extracted by said extraction means (Column 12, Lines 16-20); and,

With respect to Claims 11 and 16, Nakamura et al. teach an x-ray tube control apparatus, and the method for its use, comprising:

- input means (290) to which a maximum voltage value of tube is input (Column 7, Lines 20-26);
- storage means (270) which stores a plurality of limit tube current control programs for stopping application of a tube voltage with a limit tube current value corresponding to a maximum tube voltage value of said tube as a threshold according to the maximum tube voltage values (Column 12, Lines 3-20);
- extraction means (280) which extracts one from said plurality of limit tube current control programs stored in said storage means which corresponds to the maximum tube voltage value input (Column 7, Lines 26-34); and,
- output means (220) which outputs said limit tube current control program extracted by said extraction means (Column 7, Lines 48-51).

With respect to Claims 12 and 17, Nakamura et al. teach an x-ray tube control apparatus, and the method for its use, comprising:

- input means (290) to which a maximum voltage value of tube is input (Column 7, Lines 20-26);
- storage means (270) which stores a plurality of focus lens control programs for minimizing a focal point when an electron beam hits a target of said tube with a maximum tube voltage value applied to target according to the maximum tube voltage values (Column 6, Lines 7-20);
- extraction means (280) which extracts one from said plurality of focus lens control programs stored in said storage means which corresponds to the maximum tube voltage value input (Column 7 Lines 26-34, and Column 6 Lines 7-20); and,
- output means (40, 210), which outputs said focus lens control program extracted by said extraction means (Column 6, Lines 7-51).

Claims 10-12 and 15-17 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent Application Publication to Feda (2004/0247080).

With respect to Claims 10 and 15, Feda teaches an x-ray tube control apparatus, and the method for its use, comprising:

- input means (101) to which a maximum voltage value of tube is input (Paragraph 59 Lines 15-21, and Paragraph 261);
- storage means (102, Paragraph 40 Lines 4-18) which stores a plurality of limit tube voltage control programs for stopping application of a tube voltage with a limit tube voltage value corresponding to a maximum tube

voltage value of said tube as a threshold according to the maximum tube voltage values (Paragraph 53);

- extraction means (108) which extracts one from said plurality of limit tube voltage control programs stored in said storage means which corresponds to the maximum tube voltage value input (Paragraph 59); and,
- output means (109), which outputs said limit tube voltage control program extracted by said extraction means (Paragraph 59).

With respect to Claims 11 and 16, Feda teaches an x-ray tube control apparatus, and the method for its use, comprising:

- input means (101) to which a maximum voltage value of tube is input (Paragraph 59 Lines 15-21, and Paragraph 261);
- storage means (102, Paragraph 40 Lines 4-18) which stores a plurality of limit tube current control programs for stopping application of a tube voltage with a limit tube current value corresponding to a maximum tube voltage value of said tube as a threshold according to the maximum tube voltage values (Paragraph 53);
- extraction means (108) which extracts one from said plurality of limit tube current control programs stored in said storage means which corresponds to the maximum tube voltage value input (Paragraph 59); and,
- output means (109), which outputs said limit tube current control program extracted by said extraction means (Paragraph 59).

With respect to Claims 12 and 17, Fedra teaches an x-ray tube control apparatus, and the method for its use, comprising:

- input means (101) to which a maximum voltage value of tube is input (Paragraph 59 Lines 15-21, and Paragraph 261);
- storage means (102, Paragraph 40 Lines 4-18) which stores a plurality of focus lens control programs for minimizing a focal point when an electron beam hits a target of said tube with a maximum tube voltage value applied to target according to the maximum tube voltage values (Paragraphs 52 and 53);
- extraction means (108) which extracts one from said plurality of focus lens control programs stored in said storage means which corresponds to the maximum tube voltage value input (Paragraph 59); and,
- output means (109) which outputs said focus lens control program extracted by said extraction means (Paragraph 59).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2-4 and 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fedra.

With respect to Claims 2 and 6, Feda teaches an x-ray tube control apparatus, and the method for its use, comprising:

- storage means (102, Paragraph 40 Lines 4-18) which stores a plurality of limit tube voltage control programs for stopping application of a tube voltage with a limit tube voltage value corresponding to a maximum tube voltage value of said tube as a threshold according to the maximum tube voltage values (Paragraph 53);
- extraction means (108) which extracts one from said plurality of limit tube voltage control programs stored in said storage means which corresponds to the maximum tube voltage value input (Paragraph 59); and,
- rewriting means (102, Paragraph 40, Lines 4-18) which rewrites a limit tube voltage control program, stored in a memory section in a control apparatus that controls an operation of said x-ray tube (Paragraph 40), with said limit tube voltage control program extracted by said extraction means via a digital communications line (Paragraph 45).

Feda do not specifically teach said digital communications line is a telecommunications line.

Feda teaches that it is known to enable an x-ray controller to communicate with external systems and remote components through communication interfaces (Paragraph 45, and Item 318, Figure 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a telecommunications line, since Feda shows in Paragraph

45 and Figure 3, Item 318, that such a connection would enable communication with remote devices.

With respect to Claims 3 and 7, Feda teaches an x-ray tube control apparatus, and the method for its use, comprising:

- storage means (102, Paragraph 40 Lines 4-18) which stores a plurality of limit tube current control programs for stopping application of a tube voltage with a limit tube current value corresponding to a maximum tube voltage value of said tube as a threshold according to the maximum tube voltage values (Paragraph 53);
- extraction means (108) which extracts one from said plurality of limit tube current control programs stored in said storage means which corresponds to the maximum tube voltage value input (Paragraph 59); and,
- rewriting means (102, Paragraph 40, Lines 4-18) which rewrites a limit tube current control program, stored in a memory section in a control apparatus that controls an operation of said x-ray tube (Paragraph 40), with said limit tube current control program extracted by said extraction means via a digital communications line (Paragraph 45).

Feda do not specifically teach said digital communications line is a telecommunications line.

Feda teaches that it is known to enable an x-ray controller to communicate with external systems and remote components through communication interfaces (Paragraph 45, and Item 318, Figure 3).

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It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a telecommunications line, since Feda shows in Paragraph 45 and Figure 3, Item 318, that such a connection would enable communication with remote devices.

With respect to Claims 4 and 8, Feda teaches an x-ray tube control apparatus, and the method for its use, comprising:

- storage means (102, Paragraph 40 Lines 4-18) which stores a plurality of focus lens control programs for minimizing a focal point when an electron beam hits a target of said tube with a maximum tube voltage value applied to target according to the maximum tube voltage values (Paragraphs 52 and 53);
- extraction means (108) which extracts one from said plurality of focus lens control programs stored in said storage means which corresponds to the maximum tube voltage value input (Paragraph 59); and,
- rewriting means (102, Paragraph 40, Lines 4-18) which rewrites a focus lens control program, stored in a memory section in a control apparatus that controls an operation of said x-ray tube (Paragraph 40), with said focus lens control program extracted by said extraction means via a digital communications line (Paragraph 45).

Feda do not specifically teach said digital communications line is a telecommunications line.

Feda teaches that it is known to enable an x-ray controller to communicate with external systems and remote components through communication interfaces (Paragraph 45, and Item 318, Figure 3).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to use a telecommunications line, since Feda shows in Paragraph 45 and Figure 3, Item 318, that such a connection would enable communication with remote devices.

Allowable Subject Matter

Claims 1, 5, 9, 13, 14, and 18 are allowed.

With respect to Claims 1, 5, 9, and 14, although prior art teaches many of the elements of the claimed invention, including storage, extraction, and rewriting means for controlling an x-ray tube voltage, current, and focal spot diameter, and the use of input steps, prior art fails to teach or fairly suggest an apparatus or method wherein the increase in voltage and/or current during tube warm-up is dependent upon the downtime of the tube in the manner required by claims 1-8.

With respect to Claims 13 and 18, although prior art teaches many of the elements of the claimed invention, including warming up programs for an x-ray tube, storage, extraction, and rewriting means for controlling an x-ray tube voltage, current, and focal spot diameter, and the use of input steps, prior art fails to teach or fairly suggest an apparatus or method wherein the input maximum value to storage means is less than a programmed maximum voltage value and wherein storage means minimizes

the difference between stored and input maximum voltage values to select the programmed value that is greater than the input value.

Response to Arguments

Applicant's arguments filed 30 June 2006 have been fully considered but they are not persuasive.

With respect to Claims 10-12 and 15-17, Applicant asserts that neither Nakamura or Feda teach or suggest selecting the limit tube voltage control program, limit tube current control program, or focus lens control program that corresponds to the maximum tube voltage value. Examiner respectfully disagrees.

Nakamura teaches the control computer that stores programs for setting target current and target voltage in accordance with maximum tube voltage, as cited above and in the previous action (Column 7 Lines 24-27, Column 11 Lines 26-31, and Column 12 Lines 3-20) and selects from focus control programs to keep the focus maintained regardless of tube voltage and current (Column 6, Lines 7-20). Feda teaches preprogrammed levels that may be set by the controller for voltage, current, and beam output (Paragraph 53) based on controller parameters, known in the art to include maximum tube voltage (Paragraph 59) as well as feedback control and beam deflection/focus control based on device tolerances (Paragraphs 52-53).

Therefore, the rejections of Claims 10-12 and 15-17 are maintained.

Applicant's arguments, see Applicant Amendment, filed 30 June 2006, with respect to Drawings, Specification, and Claim objections have been fully considered and are persuasive. The objections to the Drawings, Specification, and Claims, have been overcome by the amendment, and have been withdrawn.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

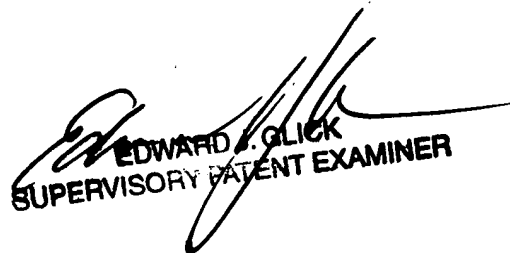
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Anastasia Midkiff whose telephone number is 571-272-5053. The examiner can normally be reached on M-F 7-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Glick can be reached on 571-272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

ASM
9/11/06



EDWARD J. GLICK
SUPERVISORY PATENT EXAMINER

